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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/245,168

02/05/1999

VINCENT K. JONES

CISCP604

4595

26541

7590

05/04/2004

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EXAMINER

HOM, SHICK C

ART UNIT

PAPER NUMBER

2666

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DATE MAILED: 05/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/245,168

Applicant(s)

JONES ET AL.

Examiner

Shick C Hom

Art Unit

2666

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,3-8,12,13,16-21,26 and 28 is/are allowed.
- 6) ☒ Claim(s) 2,9-11,14,15,22-25,27 and 29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 13.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Art Unit: 2666

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-29 have been considered but are moot in view of the new ground(s) of rejection.

Drawings

2. The drawings are objected to because in Fig. 5 a brief descriptive label must be provided for the numbered items, i.e. OFDM burst 500, cyclic prefix 502, and supplemental cyclic prefix f05; and in Fig. 8 provide brief descriptive label for the x-axis, e.g. burst time, cost function 800, and right edge 802. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Art Unit: 2666

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 2, 14-15, and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Beale (5,828,710).

Regarding claims 2 and 27:

Beale discloses the method for transmitting an OFDM signal to facilitate receiver synchronization comprising (see col. 1 lines 42-61 and col. 9 line 42 to col. 10 line 48 which recite synchronization in an OFDM modulation system): developing a frequency domain burst wherein periodically spaced frequency domain symbols of said burst have values including non-zero values and all frequency domain symbols between said periodically spaced frequency domain symbols have null energy, wherein said periodically spaced frequency domain symbols are spaced at least four symbols apart; and transmitting said

Art Unit: 2666

frequency domain burst (see col. 6 line 30 to col. 7 line 46 which recite transmitting frame having predetermined duration including null symbol, which clearly reads on transmitting periodically spaced symbols having null energy, further Figs. 3 and 4 show that all frequency domain symbols between said periodically spaced non-zero frequency domain symbols have null energy as now claimed).

Regarding claim 14:

Beale discloses the system for transmitting an OFDM signal to facilitate receiver synchronization comprising (see col. 1 lines 42-61 and col. 9 line 42 to col. 10 line 48 which recite synchronization in an OFDM modulation system): a synchronization burst generation stage that develops a frequency domain burst wherein periodically spaced frequency domain symbols of said frequency domain burst have values including non-zero values and all frequency domain symbols between said periodically spaced frequency domain symbols have null energy, wherein said periodically spaced frequency domain symbols are spaced at least four symbols apart (see col. 6 line 30 to col. 7 line 46 which recite transmitting frame having predetermined duration including null symbol, which clearly reads on transmitting periodically spaced symbols having null energy, further Figs. 3 and 4 show that all frequency domain symbols between said

Art Unit: 2666

periodically spaced non-zero frequency domain symbols have null energy as now claimed); and a transform processing stage that transforms said frequency domain burst into a time domain burst (see the A/D converter in Fig. 1, col. 7 lines 7-61, and col. 8 line 48 to col. 10 line 7 which recite the IFFT for transforming the frequency burst into time domain).

Regarding claim 15:

Beale discloses wherein at least one of said periodically spaced frequency domain symbols carries data (see Fig. 3 and col. 7 lines 7-46 which recite the data symbols between the null symbols).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the

Art Unit: 2666

applicability of 35 U.S.C. 1038 and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 9-11, 22-25, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beale (5,828,710) in view of Barratt et al. (5,909,470).

Regarding claims 9-11, 22-25, and 29:

Beale discloses the method and system for synchronizing a receiver to an OFDM signal (see col. 1 lines 42-61 and col. 9 line 42 to col. 10 line 48 which recite synchronization in an OFDM modulation system) comprising: receiving at least one synchronization OFDM burst wherein periodically spaced frequency domain symbols of said at least one synchronization OFDM burst have predetermined values and all frequency domain symbols between said periodically spaced frequency domain symbols have null energy (see col. 6 line 30 to col. 7 line 46 which recite transmitting frame having predetermined duration including null symbol, which clearly reads on transmitting periodically spaced symbols having null energy, further Figs. 3 and 4 show that all frequency domain symbols between said periodically spaced non-zero frequency domain symbols have null energy as now claimed).

Beale did not teach the evaluating a cost function that varies depending on burst timing alignment, said cost function measuring time domain periodicity of said synchronization OFDM

Art Unit: 2666

burst; and setting said burst timing alignment to optimize said cost function as in claims 9-11, 22-25, and 29.

Barratt et al. teach that it is known to provide a method for generating a reference signal transmitted from a remote station to a communications station used for time alignment at the receiver whereby the cost function is minimized using the received signals and the reference signal as set forth at col. 6 line 63 to col. 7 line 22 and col. 11 lines 24-45 in the field of digital and multiplex communications for the purpose of providing a more cost effective system operation which clearly anticipate the step of evaluating a cost function that varies depending on burst timing alignment and setting the timing alignment to optimize the cost function.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the step of evaluating a cost function that varies depending on burst timing alignment and setting the timing alignment to optimize the cost function as taught by Barratt et al. to the system of Beale because Barratt et al. teach the desirable advantage of providing a more cost effective system operation by varying timing alignment in Beale.

Art Unit: 2666

Allowable Subject Matter

8. Claims 1, 3-8, 12-13, 16-21, 26 and 28 are allowed.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any response to this final action should be mailed to:

Art Unit: 2666

Box AF

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9306 (for formal communications; please
mark "EXPEDITED PROCEDURE")

Or:

(for informal or draft communications, please
label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal
Park II, 2121 Crystal Drive, Arlington. VA., Sixth
Floor (Receptionist).

Any inquiry concerning this communication or earlier
communications from the examiner should be directed to Shick Hom
whose telephone number is (703) 305-4742. The examiner's
regular work schedule is Monday to Friday from 8:00 am to 5:30
pm EST and out of office on alternate Friday.


If attempts to reach the examiner by telephone are
unsuccessful, the examiner's supervisor, Seema Rao, can be
reached at (703) 308-5463.

Application/Control Number: 09/245,168

Page 10

Art Unit: 2666

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.



DAN TON
TECHNOLOGY CENTER

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April 28, 2004